

**Amendments to the Claims:**

Please cancel original claims 1-22, and add claims 23-33 as follows:

23. (New) A method of ordering pairs of sequence tags, the method comprising the steps of:

- a) providing a population of pairs of sequence tags of restriction fragments, produced by digesting a fragment of genomic DNA with a plurality of combinations of restriction endonucleases;
- b) removing duplicate pairs of sequence tags from the population;
- c) selecting a pair of sequence tags from the population;
- d) comparing each sequence tag of the selected pair with each sequence tag of a first pair and a last pair of a candidate ordering;
- e) adding the selected pair to an end of the candidate ordering whenever a sequence tag of the selected pair matches the sequence tag of the first pair or the last pair of the candidate ordering, to form a new candidate ordering; and
- f) repeating steps c) through e) until all pairs of the population have been selected.

24. (New) The method of claim 23, wherein said population of pairs of sequence tags consists of n pluralities of pairs of sequence tags, each plurality being formed by digesting said fragment of genomic DNA in n separate reactions, each with a different n-1 combination of restriction endonucleases, wherein each pair of sequence tags is formed by ligating a portion of each end of each restriction fragment together.

25. (New) The method of claim 24, wherein said population of pairs of sequence tags consists of samples of pairs of sequence tags from each of said n pluralities.

26. (New) The method of claim 25, wherein each of said samples has the same size.

27. (New) The method of claim 26, wherein  $n = 3$  and each said restriction endonuclease has

a six-basepair recognition site.

28. (New) An oligonucleotide composition derived from genomic DNA, said composition comprising:

a plurality of pairs of sequence tags, each pair of said plurality being from opposite ends of a restriction fragment of genomic DNA, and each pair being from nine to eighteen basepairs in length.

29. (New) The oligonucleotide composition of claim 28, wherein said restriction fragment has ends produced by digestion with different restriction endonucleases.

30. (New) The oligonucleotide composition of claim 29, wherein said restriction fragment has ends produced by digestion of two different restriction endonucleases selected from a group consisting of three different restriction endonucleases.

31. (New) The oligonucleotide composition of claim 30, wherein each of said three different restriction endonucleases has a six-basepair recognition site.

32. (New) The oligonucleotide composition of claim 28, wherein said plurality is a sample having a size sufficient to contain with a probability of ninety-nine percent at least one copy of each of said pairs of sequence tags.

33. (New) The oligonucleotide composition of claim 28, wherein each sequence tag of each of said pairs contains the same number of basepairs.